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PIXIUM 4600 : Installation, Service, and Users manual

This manual describes the installation procedures and operation of the PIXIUM 4600 digital X-ray detector. It also provides information for service and safety operation. It is intended for use by a system integrator. Please read this manual carefully before performing any installation or use of a PIXIUM 4600 detector.



Document history

<u>Index</u>	<u>Date</u>	<u>Author</u>	<u>Nature of the modification</u>
A	06 / 04 / 00	J. DUTIN	Initial document
B	05 / 09 / 03	J. DUTIN	Laser diode classification (DM 12 074) Product evolution (DM 14 425)
C	30 / 10 / 03	P. SALQUE	Accompanying documents evolution (DM 17029)
D	25 / 04 / 05	C. BOUCHET	Acclimatization time regularization (DM 21908)
E	22 / 07 / 05	J. DUTIN	Recycling label (DM 23669)
F	22 / 09 / 05	J. DUTIN	Removal of CD-ROM (DM 22958)
G			

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Reference documents

Ref [1]	PIXIUM 4600 General cautions and standards prescriptions applying to system integration (document reference 61416485 – 108)
Ref [2]	PIXIUM 4600 Storage, handling and packing instructions (document reference 1001500 – 108)
Ref [3]	PIXIUM 4600 Mechanical Interface Specification (document reference 1000202 – 580)
Ref [4]	PIXIUM 4600 Outline drawing (document reference 1000015 – 041)
Ref [5]	PIXIUM 4600 Software Interface Specification (document reference 1000169 – 580)
Ref [6]	PIXIUM 4600 Electrical Interface Specification (document reference 1000201 – 580)

Warning

This manual is intended to help integrators in the installation of a PIXIUM 4600 detector and its first operation. The figures and data given in this manual cannot be considered to be a contractual specification. Consult TRIXELL for additional information.

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1 PIXIUM 4600 PRESENTATION

1.1 GENERAL DESCRIPTION

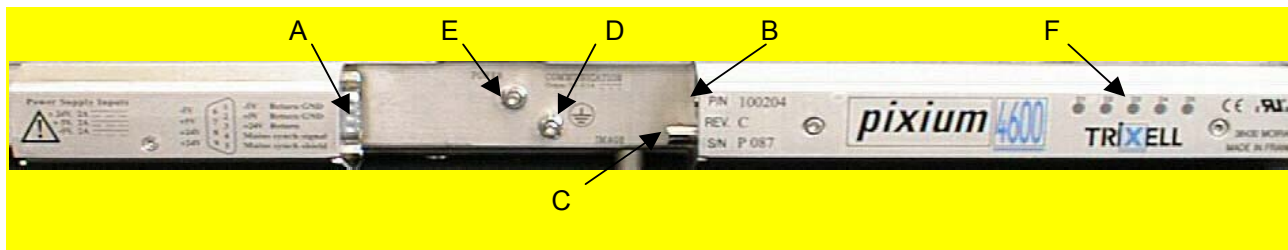
The PIXIUM 4600 is a flat panel X-ray detector used for radiological applications, and is part of a digital image acquisition of an overall Radiography System.

1.2 DELIVERY

The standard PIXIUM 4600 delivery includes :

- a detector,
- a CE compliance certificate,
- a print of the final test report,
- miscellaneous labels and cards according to customer specification,

1.3 DETECTOR



The detector consists of a metal housing with a carbon fiber composite window for X-ray input on the upper side, and internal lead shielding against X-radiation.

It includes on one side (right side of the active sensitive array) :

- an input connector for the external power supply [A]
- a bi-directional RS-232 serial link connector for remote control [B]
- an output connector (optical link) for data transfer [C]
- two bolts : one to ground the detector [D] and the other to fasten the serial link cable in order to provide cable strain relief [E]
- five LED indicators to display the state of the detector [F]
- identification and warning labels (refer to appendix B)

1.4 IDENTIFICATION

The identification labels on the right side of the detector housing provide information for :

- the type (PIXIUM 4600)
- the part number (P/N)
- the revision code (REV.)

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- the serial number (S/N)
- information for power supply connection

See appendix B for label models.

1.5 APPLICABLE STANDARDS :

1.5.1 International Standards :

Basic Safety Standard :

- IEC 601.1 2nd edition (1988), including amendment no 1 (1991) and amendment no 2 (1995) “Medical electrical equipment. Part 1: General requirements for safety” :
 - § 5.1 : Pixium 4600 is a Class I equipment
 - § 5.1 : Pixium 4600 has no applied part
 - § 5.3 : Pixium 4600 has no specific protection against ingress of water
 - § 5.4 : Pixium 4600 can be sterilized and disinfected (see the special corresponding section in this document)
 - § 5.5 : Pixium 4600 is not suitable for use in the presence of flammable mixtures
 - § 5.6 : Pixium 4600 is designed to run in continuous operation

Collateral Safety Standards :

- IEC 601.1.2 2nd edition (2001-09), “Medical electrical equipment – General requirements for safety – 2 – Collateral standard : Electromagnetic Compatibility – Requirements and tests”
- IEC 601.1.3 1st edition (1994), “ Medical electrical equipment – General requirements for safety – 3 – Collateral standard : Radiation Protection in Diagnostic X-Ray equipment”
- IEC 601.1.4 Edition 1.1(2000-04), “Medical electrical equipment – 4 – Collateral standard : Programmable Electrical Medical Systems”

1.5.2 European Directive :

- Medical Device Directive MDD 93/42/EEC, of June 14, 1993, revision 398L0079 (Dec. 7, 1998) and 300L0070 (Dec. 13, 2000). Applies to all medical equipment except for active implantable devices.

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1.5.3 National standards :

United States :

- UL 2601-1 “Medical electrical equipment. Part 1: General requirements for safety”; 2nd edition, October 1997
- DHHS “Radiation protection (Code of Federal Regulations, title 21, Subchapter J, section 1020)”; revised version of April 1, 2002

Canada :

- CAN/CSA-C22.2 No. 601.1-M90 “Medical electrical equipment. Part 1: General requirements for safety”; November 1990 + A1:1991 + A2:1995
E205430 / class PIDF2 and PIDF8

1.6 CERTIFICATIONS

The PIXIUM 4600 is certified and labeled as follow :

- UL : Combined UL/CSA certification (C-UL) label with following UL file reference :
E205430 / class PIDF2 and PIDF8
- CSA : Combined UL/CSA certification (C-UL) label (see above)
- CE : CE label

1.7 GUIDANCE FOR MANUFACTURER'S DECLARATION

Refer to accompanying document :

“General cautions and standards prescriptions applying to system integration”.

(document reference 61416485 – 108)

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2 PIXIUM 4600 TECHNICAL FEATURES

2.1 MECHANICAL FEATURES

2.1.1 Dimensions and fixations

Refer to outline drawing in Mechanical Interface Specification.

2.1.2 Weight

20 kg maximum (detector alone)

2.1.3 Input window

The X-ray input window (upper side of the detector) is made of a carbon fiber composite substrate, to protect the sensitive layer and active array of the detector. This input window can withstand a maximum pressure of 60 N/cm² over 2 cm² on the window center.

!!! CAUTION !!! FRAGILE : Do not push on the upper face of the detector !!! ATTENTION !!! FRAGILE : Ne pas appuyer sur la face avant du détecteur

2.2 ELECTRICAL FEATURES

2.2.1 Power supply and mains synchronization input connector

Power supply	Detector input voltage (nominal value)	Input current (peak value)
+ 24V	Vin low : + 23.7V / Vin high : + 25.3V	2A
+5V	Vin low : + 5.0V / Vin high : + 5.2V	2A
-5V	Vin low : - 5.2V / Vin high : - 5.0V	2A

Mains synchronization input : 50 or 60 Hz mains frequency internal synchronization for the detector timing (trigger on the falling edge of a TTL compatible input signal). This link should be externally opto-isolated to prevent ground loops in the detector connections. The detector input is an open-collector schematics.

Connector type (detector side) : D-Sub / 9 contacts / male

Cable length : as short as possible.

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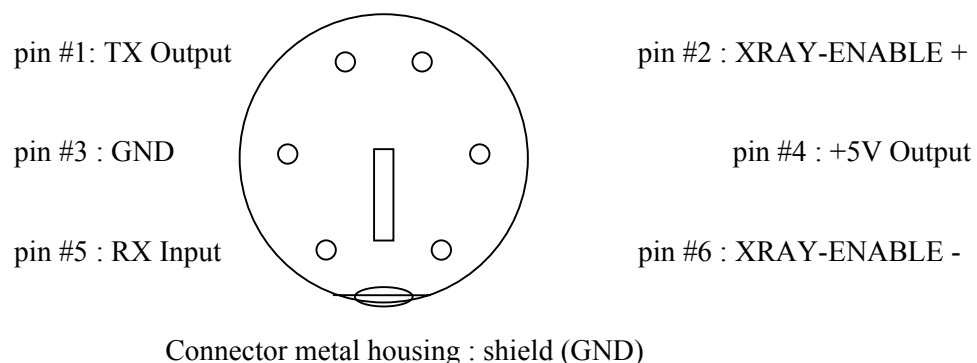
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Connector pinout (see label on detector for pin locations):

PIN NUMBER (9-pin connector)	FUNCTION (3 power supplies with mains synchronization)
1	- 5 V Return (GND)
2	+ 5 V Return (GND)
3	+ 24 V Return (GND)
4	Mains synchronization signal
5	Mains synchronization signal return and shield (GND)
6	- 5 V
7	+ 5 V
8	+ 24 V
9	+ 24 V
Housing	Shield (GND)

2.2.2 Remote control and X-ray enable output connector

- Bi-directional RS-232C serial link for remote control of the detector with no hardware handshake and transfer rate set to 9600 bds / even parity / 1 bit stop. This link should be externally opto-isolated to prevent ground loops in the detector connections.
- Current loop (20mA) interface which can be used to enable the X-ray generator through an optocoupler device.
- Connector type (detector side) : 6-pin mini-DIN female
- Connector pinout (receptacle) :



The pin #4 (labeled +5V) is a power supply output, available for external uses. The maximum current available on this +5V pin is 100mA (@ 4.75V).

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2.2.3 Data transfer connector

Optical link transmission is used for image data output using 160 Mbits per second serial asynchronous transmission (AMD Taxi ® protocol) on a fiber optic.

Fiber optic characteristic : multimode link with 62.5 / 125 µm fiber.

Connector type : ST II style

2.2.4 Protective earth

!!! CAUTION !!!

Connector and cable shields must not be used as Protective Earth connection.

!!! ATTENTION !!!

Le blindage des connecteurs et des câbles ne doit pas être utilisé pour mettre le détecteur à la terre de protection.

Chassis grounding is carried out using an specific bolt on the side of the detector (see section 1.3 [D]). Used for Protective Earth connection of the detector.

!!! CAUTION !!!

The specific bolt must not be used for any other purpose than Protective Earth connection. Removing this connection must need a service tool.

!!! ATTENTION !!!

Le goujon spécifique de mise à la masse ne doit pas être utilisé à d'autres fins que la connexion de la terre de protection. La déconnexion nécessite un outil de maintenance.

For EMC reasons, there is no protective insulation between the electronics inside the detector and the metal housing.

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2.3 SOFTWARE FEATURES

The detector is interfaced with the Radiographic System through programming and control via a serial link and a message protocol.

The detector can send to the System, upon request, messages containing the hardware and software revision numbers, and the detector's serial number and date code.

The detector has built-in self-test features to provide the System with information for malfunction diagnostic and preventive maintenance (see mode table).

The detector can generate, if enabled, error or warning messages in case of communication or internal electronics malfunctions (such as internal voltages drifts or breakdowns). It is the System's responsibility to decide what to do in case of such an error or warning.

The detector has built-in low-level routines that can be used by the System to perform image quality tests.

The detector has a built-in set of test patterns that can be used to check the operation of the detector's electronics (analog test patterns) and of the image data transmission (digital test patterns) : see mode table and software interface specification.

If the detector has to reboot due to an internal error, it is able to come up to a normal operating mode by itself.

2.4 OPERATION MODE - SYNCHRONIZATION

The internal detector timing is synchronized with an external signal connected to the Mains synchronization input (see Power supply and mains synchronization input connector in section 2.2.1)

External synchronization period is 20 ms when operating on 50Hz mains frequency and 16.7 ms when operating on 60 Hz mains frequency. The operation timing sequences remain the same whatever the mains frame rate is.

2.5 ENVIRONMENTAL CONDITIONS

The transport and storage environmental conditions are (detector inside its original packing) :

- temperature range : - 25 °C to + 55 °C
- relative humidity : 10 % to 95 % R.H.
- pressure : 70 to 106 kPa
- shocks : 25 g , 6 ms , 150 shocks in X,Y,Z axis
- vibrations : 5-9 Hz , 3.5 mm / 9-500 Hz , 1 g / X,Y,Z axis

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The operation environmental conditions are :

- detector ambient temperature range:
 - + 18°C to + 30 °C for specified performance
 - + 10°C to + 40°C for functionality only (no performance level is guaranteed)
- relative humidity : 20 % to 75 % R.H.
- pressure : 70 to 106 kPa
- shocks : 15g, 6 ms, 100 shocks in X,Y,Z axis.
- vibrations : 10-60 Hz , 0.035 mm / 60-500 Hz , 0.5g / X,Y,Z axis

2.6 ACCESSORIES

For proper operation of the detector within a Radiographic System, an anti-scattering grid and an automatic exposure control device must be used. These devices are not part of the detector, they must be supplied and installed by the System integrator. The detector has no direct mechanical interface for such devices.

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3 PIXIUM 4600 INSTALLATION

3.1 UNPACKING

!!! CAUTION !!!

Do not open the inner plastic bag before a sufficient acclimatization time. The acclimatization time is typically 24 hours. It is recommended to remove the detector from the two cardboard boxes during this time - however do not under any condition open the sealed protective bag during this time. Take care to not apply undo shocks to the shipping containers even if empty.

!!! ATTENTION !!!

N'ouvrir le sac plastique interne qu'après un temps d'acclimation suffisant. Le temps d'acclimation est de 24 heures. Il est recommandé de sortir le détecteur des deux cartons pendant cette période - toutefois n'ouvrir sous aucun prétexte le sachet de protection étanche pendant cette période. Ne pas appliquer de chocs excessifs même sur l'emballage vide.

Refer to the Storage and handling instructions (document referenced 1001500) for complete information : a copy is attached to the side of the large outer cardboard box containing the PIXIUM 4600.

!!! CAUTION !!!

The detector is sensible to moisture. While not used, it must be stored with protection against humidity

!!! ATTENTION !!!

Le détecteur est sensible à l'humidité. Lorsqu'il n'est pas utilisé, il doit être tenu à l'abri de l'humidité.

3.2 COOLING

There is no particular requirement for cooling of the detector while operating the detector in ambient temperature range, as long as there is natural airflow cooling (free convection around the detector housing).

In regular operation, a warning message can be programmed to be sent by the detector to the System if internal temperature exceeds a pre-determined threshold. It is the System's responsibility to decide what to do in case of a detector temperature warning message.

3.3 INSTALLATION

Use ESD protection and precautions while unpacking the PIXUM 4600 from its protective bag and installing it in its operational place.

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Components needed for installation and operation of the PIXIUM 4600, but not supplied with the detector :

- three DC power supplies (+24V / +5V / -5V)
- power supply cable
- fiber optic cable for data link
- serial cable for communication link
- protective earth cable for ground connection
- mains synchronization generator
- system computer (for instance a PC with Windows NT 4.0 operating system and with acquisition boards and software installed)

All installation work is possible with standard mechanical service tools.

During installation, ensure that no sharp corners or edges can damage the cabling.

Check and adjust the alignment between X-Ray generator and detector.

3.4 CONNECTION

Connect the Protective Earth terminal (specific bolt marked with PE symbol : see section 1.3 [D]) to your local protective earth with a large section cable and using the supplied clamping means.

!!! CAUTION !!! Connectors and cable shields must not be used as PE connection. The specific bolt must not be used for any other purpose than PE connection. Removing this connection must need a service tool. !!! ATTENTION !!! <i>Les connecteurs et les blindages de câble ne doivent pas être utilisé pour la mise à la terre.</i> <i>Le goujon spécifique doit être utilisé exclusivement pour la mise à la terre.</i> <i>Le démontage de cette connexion doit nécessiter un outillage.</i>
--

Connect the optical fiber from the detector (ST connector : see section 1.3 [C]) to the image acquisition board of the computer.

!!! CAUTION !!! Switch off detector main supply before moving optical fiber. !!! ATTENTION !!! <i>Couper l'alimentation du détecteur avant de manipuler la fibre optique.</i>
--

Connect the serial link cable between the detector (mini-DIN connector : see section 1.3 [B]) and the computer, and fasten the cable with the specified M4 bolt (see section 1.3 [E]) on the detector housing for strain relief.

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Connect the power supply cable to the detector (9-pin connector : see section 1.3 [A]).

!!! CAUTION !!!

The detector power supplies must be used to power the detector only.

!!! ATTENTION !!!

Les alimentations du détecteur ne doivent pas servir à alimenter autre chose que le détecteur.

!!! CAUTION !!!

Power supply inversion or out of range power supply (including a missing power supply) may harm the detector. Be sure to correctly connect and clamp the power supply cable and the connector.

!!! ATTENTION !!!

Une inversion de polarité ou une alimentation hors gamme peut endommager le détecteur. Vérifiez le raccordement et la fixation des connecteurs.

Power supplies current limitation should be adjusted to less than 5 A.

Connect the mains synchronization generator.

Check the power supplies polarity before switching on. All three power supplies must be switched on and off simultaneously. There is no hazard resulting from switching on and off the power supplies.

As soon as it is installed, it is recommended to keep the detector continuously powered, even when not used (during night for example).

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4 PIXIUM 4600 FIRST OPERATION

4.1 ADJUSTMENT

All adjustments done on the detector at the factory remain unchanged during transportation and installation. There is no need to download a setup before operation.

4.2 SWITCHING POWER ON

Switch on the three power supplies simultaneously.

Check the five LED indicators on the right side of the detector (see section 1.3 [F]) :

- D1 turns ON : external DC power OK, then
- D2 turns ON : detector OK, then
- D3 turns ON : communication OK, as soon as a command is sent from the System to the detector (as stated below)
- D4 starts blinking

4.3 INITIALIZATION

As soon as a command is sent from the System to the detector, D3 indicator turns ON. The detector is ready then to share commands with the System. D3 indicator remains ON.

4.4 IMAGE ACQUISITION

When a Frame Request is received by the detector, D4 indicator turns ON (from a blinking to a fix status) during Frame Acquisition duration.

Furthermore, in case of a X-ray exposure request, D5 indicator turns ON for the duration of the X-ray Enable pulse (500 ms in default operation mode), and turns OFF during readout time.

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5 PIXIUM 4600 REGULAR OPERATION

5.1 RECOMMENDATIONS

5.1.1 Temperature

Operation temperature must be kept as stable as possible within the specified range.

The detector can be operated within the operation environmental conditions without any cooling means, provided natural convection of air within the detector ambient temperature range along the detector back plate is made possible by System integration. In case natural convection is not possible or not sufficient, an external cooling device must be installed and attached to the detector by the means of dedicated threaded holes in the back plate of the detector housing. The external cooling device should then extract heat from the detector back plate. Refer to the following section for additional information on heat sink mounting.

The detector is equipped with a temperature monitor used both to send early warning messages to the System in case of too low or too high detector temperature, and to measure the detector electronics temperature. The measured temperature can be sent to the System in a message upon System request. It is the System's responsibility to decide what to do in case of detector temperature warning.

5.1.2 Cooling

The detector is not sealed against the ingress of a thermal grease. Therefore do not use any thermal grease or other material when attaching a heat sink or other thermal exchanger to back face of the detector. Use of such material can harm the detector and will invalidate the warranty of the detector if they have been found to have entered the detector housing.

5.1.3 EMC compliance

The power supply cable must be shielded with shield continuity at the power supply input connector. We recommend to place one EMI core KITAGAWA model KFC-130, on the power supply cable, as close as possible to 9-pin connector.

The communication cable must be shielded with shield continuity at the communication input connector. Trixell recommend to :

- use a connector JST series MD on the communication cable.
- use the low capacitance computer cable BELDEN model 8103 or equivalent (24AWG, 3 pairs).
- place one EMI core WÜRTH model 7427113 or equivalent, on the communication cable, as close as possible to communication connector.

In order to reduce magnetic interferences, the detector needs to be synchronized to the mains frequency of the System installation (refer to Section 2.4 Operation mode - Synchronization)

Portable and mobile RF communication equipment can affect the detector.

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5.1.4 Warm-up time from a cold start

The detector will be fully operational within typically 30 minutes after being powered up with performance levels guaranteed after a maximum of 240 minutes. It is the System responsibility to check for this delay.

5.2 INTEGRATION

5.2.1 Front protective label

The detector is delivered with a large label attached to the input carbon fiber composite substrate. It provides marks to align the X-ray beam collimation with the detector sensitive array.

!!! CAUTION !!! Remove the protective label before operation (or before detector integration on the System). !!! ATTENTION !!! <i>Oter l'étiquette de protection avant la mise en service ou l'intégration du détecteur</i>
--

5.2.2 Mechanical fixations :

In all cases, the detector must be fixed to the System by means of all eight screws M4 (refer to outline drawing for location), with a threaded length of 4 mm minimum and a total length of 7 mm.

For accessory fixation on the detector back side (such as heat sinks), use up to eight screws M4 (refer to outline drawing for location), with a length of 6 mm maximum.

Refer to appendix C (outline drawing) for the location of these fixations.

The detector can be operated in any position in space (0 to 360° in any X, Y, Z directions).

5.3 X-RAY GENERATOR CONNECTION

The PIXIUM 4600 provides three different possibilities to enable X-Radiation. Depending on the System receiving the detector, X-ray emission can be enabled using :

- Current-loop signal linked with Com signals on the mini-DIN connector and designed to drive an optocoupler device
- Microcontroller messages on the RS-232 serial link
- Taxi ® messages linked with image data on the optic fiber

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!!! CAUTION !!!

Whatever possibility is used, the X-ray Enable signal only indicates to the System that the detector is ready to receive X-radiation. It is the System responsibility to control the actual emission of X-radiation.

!!! ATTENTION !!!

Quelque soit la solution retenue, le signal "X-ray Enable" ne fait qu'indiquer au système que le détecteur est prêt à recevoir un rayonnement X. Il est de la responsabilité du système de contrôler l'émission de rayonnement X.

5.4 CONFIGURATION AND UPGRADE

There is no manual configuration nor adjustment required for the detector (e.g. jumper setting, etc...). All configuration and adjustment steps are possible via message exchange between the System and the detector.

The upgrade of the detector's firmware (except the boot software) can be done at the factory via a setup file download using the communication protocol.

5.5 CALIBRATION

Calibrations needed for image quality are defined by the system program.

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5.6 DETECTOR MODE SELECTION

There are two sets of modes programmed in the detector : Table 0 modes are used for image acquisition, while Table 1 modes are dedicated to detector tests. Only modes 1 to 5 in Table 0 are qualified for System use.

The following tables defines the modes :

<i>PIXIUM 4600 / revision lower or equal to Ex</i>		
Mode number	Table 0 : Imaging modes	Table 1 : Test modes
1	Single-shot with 0.5 s X-ray Enable window	Single-shot with 0.5 s X-ray Enable window
2	Special mode with 3.2 s X-ray Enable window	Single-shot with reverse array readout and 0.5 s X-ray Enable window
3	Single-shot with 1 s X-ray Enable window	Readout IC built-in self test even
4	Single-shot with 2.3 s X-ray Enable window	Readout IC built-in self test odd
5	Single-shot with 4 s X-ray Enable window	Vdr voltage readout
6	Internal use only	Test mode / 30 µGy equivalent
7	Internal use only	Test mode / 5 µGy equivalent
8	Internal use only	Single-shot with reverse array readout and 4 s X-ray Enable window

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<u>PIXIUM 4600 / revision equal or higher to Fx</u>		
Mode number	Table 0 : Imaging modes	Table 1 : Test modes
1	Single-shot with 0.5 s X-ray Enable window	Single-shot with 0.5 s X-ray Enable window
2	Special mode with 3.2 s X-ray Enable window	Single-shot with reverse array readout and 0.5 s X-ray Enable window
3	Single-shot with 1 s X-ray Enable window	Readout IC built-in self test even
4	Single-shot mode with 2.3 s X-ray Enable window	Readout IC built-in self test odd
5	Single-shot with 4 s X-ray Enable window	Readout IC Vdr voltage readout
6	Internal use only	Test mode / 30 µGy equivalent
7	Double exposure mode	Test mode / 5 µGy equivalent
8	Not available	Single-shot with reverse array readout and 4 s X-ray Enable window
9	Not available	Internal use only
10	Not available	Internal use only
11	Not available	Internal use only
12 to 16	Not available	Not available

Mode description :

- Single-shot : standard image acquisition and readout cycle featuring 0.5 s (default mode) or 1s or 4s X-ray Enable window duration
- Special : same as above with X-ray enable window duration increased to 3.2 s
- Reverse readout : same acquisition mode with reverse readout of the lines (from center to top and bottom line)
- Readout IC self test : internal self test of the amplifier readout circuits (outputs a test image with white odd / even columns)
- Readout IC voltage readout : an internal reference voltage is applied on the inputs of the amplifier readout circuits (outputs a test image with a constant gray level)
- Test modes : an internal signal source is used to simulate X-ray exposure at 5 or 30 µGy dose level
- Double exposure : two frames (frame A and frame B) can be acquired within an interval of max. 2 sec ; the cycle time between two acquisitions in Double exposure mode is min. 6.5 sec.

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6 PIXIUM 4600 TROUBLESHOOTING

6.1 POWER SUPPLY RANGE

During boot-up sequence, if at least one power supply fails out of the specified range (refer to Section 2.2 Electrical Features), the detector will turn to a “Not available” status and will not go to normal operation (no image generated). Check your power supplies to restart operation.

6.2 X-RAY ENABLE OUTPUT

If the X-ray Enable output is accidentally shorted by the System, the detector will turn to a “Not Available” status. Check the X-ray Enable connection to restart operation.

6.3 INTERNAL TEMPERATURE

If the internal temperature exceed 55 °C, the detector will turn to a “Not Available” status. Switch off the power supplies and check for the cooling of the detector.

6.4 OTHER FAILURE

A “Not Available” status can also be issued by self test functions, in case of internal failure on the electronic board (firmware error, memory failure, ...). In this case, and if the above checks are performed without error, please contact Trixell support.

In the event of collision during the use :

- ensure there is no damage or deformation of enclosures and protective covers,
- check mechanical fixings of detector,
- check the protective earth,
- check all interfaces connections.

7 PIXIUM 4600 SERVICE

The detector does not need any maintenance.

There are no parts that need to be replaced due to limited lifetime. In case of malfunction, the detector will be returned as is to the manufacturer for repair. However, possible software release can be achieved using the serial link : contact Trixell support for instructions.

Use original packaging (inner and outer cardboard boxes and resealable anti-static plastic bag) for detector return. Desiccant material has to be put in the bag, in quantity equivalent to the one delivered with the detector, and the plastic bag has to be resealed (or, if not possible, hermetically re-closed by the means of appropriate adhesive tape).

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8 PIXIUM 4600 CLEANING, STERILIZATION AND DISINFECTION INSTRUCTIONS

8.1 CLEANING

Use a dry and soft cloth to clean the detector housing, being sure to use ESD protection and precautions when being in contact with the detector.

8.2 STERILIZATION AND DESINFECTION

The detector is not qualified to be sterilized and disinfected.

The system manufacturer can define these conditions, in the context of the System use.

Note that the detector is not watertight.

9 PIXIUM 4600 MANUFACTURER

PIXIUM 4600 detectors are manufactured by :

TRIXELL
Parc d'Activités Centr'Alp
460, Rue du Pommarin
38430 Moirans, France

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10 APPENDIX B : identification labels

- Symbol definition



: Caution, consult accompanying document



: Direct current

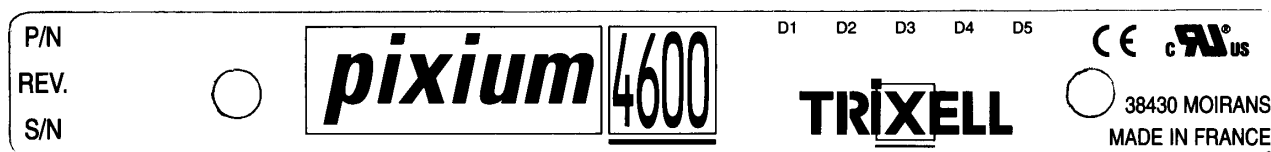


: Earth (ground)

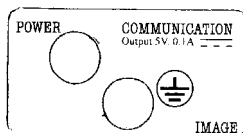


: Protective earth (ground)

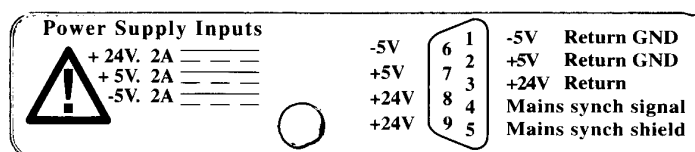
- Identification label :



- Connector location label :



- Power supply identification label :



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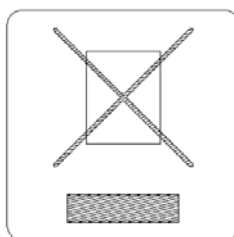
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- Protective front face label (covering the detector input window) :



- Recycling label



END OF DOCUMENT

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